Appendix B

The following version of the rifle marksmanship diagnostic and training guide is the 4.5 inch by 5.5 inch version. The 5.5 inch by 8.5 inch version is available at the ARI research unit at Fort Benning.

The 4.5 x 5.5 inch version should be printed in a pdf format. Print options should be auto-rotate; 2-sided print and flip on short edge (i.e., the "binding" is intended to be at the top of the page).

2011

Rifle Marksmanship Diagnostic and Training Guide

ARMY RESEARCH INSTITUTE

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"The program is as effective as the amount of time the Drill Sergeants put into it."
Drill Sergeant
Fort Benning, GA

"You must take your hat off during BRM."
Drill Sergeant
Fort Benning, GA

The authors would like to express their gratitude to the Drill Sergeants and the United Stated Army Marksmanship Unit (USAMU) cadre who supported this research effort. These NCOs offered invaluable tips, techniques, and insight into the world of the Initial Entry Training marksman. The research could not have been accomplished without their cooperation and expertise.

The terms Drill Sergeant and Soldier are gender neutral when used throughout this guide. Unless otherwise stated, whenever the masculine gender is used, both men and women are included. Additionally, the Guide depicts 3- and 5-round shot groups to illustrate different points and does not advocate the use of one over the other.

Contents

RIFLE MARKSMANSHIP DIAGNOSTIC AND TRAINING GUIDE

FOREWORD

Purpose

The purpose of this Guide is to assist Drill Sergeants in diagnosing and training rifle marksmanship deficiencies and skills in the Initial Entry Training (IET) environment.

> **Warning**: This Guide is **NOT** a cliff-notes version of FM 3-22.9, Rifle Marksmanship M16/M4-Series Weapons

Scope

This Guide has been designed to **supplement** the field manual and current marksmanship programs of instruction by sharing diagnostic tips and training techniques used by Drill Sergeants and USAMU NCOs to improve rifle marksmanship in the IET environment. The diagnostic tips and training techniques found within are focused on training large groups of IET Soldiers over an extended period of time and were gathered from Drill Sergeants (past and present) and USAMU NCOs through a series of interviews.

The Guide specifically addresses basic shooting fundamentals that apply to all small arms and is, therefore, a valuable source of information for all units equipped with the M16/M4 series rifle.

The Guide does not serve as a one-stop reference for all marksmanship training or supersede any doctrinal reference. In fact, the information contained in this guide builds upon the knowledge, skills, and abilities each trainer gains from reading, understanding, and applying FM 3-22.9. Several areas, such as mechanical training, optics, etc., contained in the current version of FM 3-22.9 (12 Aug 2008) and the Small Arms Integration Book (SAIB) (2006) *https://www.us.army.mil/suite/folder/4718898* are considered adequate.

How to use this Guide

The Guide is structured using the Basic Combat Training (BCT) weapons immersion program and the basic rifle marksmanship (BRM) program of instruction (POI) as a template (BCT BRM POI dated March 2010). However, the Guide is focused heavily on the initial training the Soldiers receive up to and including grouping and zeroing. The diagnostic tips and training techniques are sequenced by the rifle marksmanship events the Soldiers are subject to early in BCT. For example, as part of the weapons immersion program, Soldiers are issued their rifles within the first 72 hours of arrival at the training company. The Guide addresses specific diagnostic tips and training

techniques that can be accomplished initially to help identify "problem" shooters and to apply the appropriate remedies. The areas covered are:

- ❖ Weapons Immersion
  - ➢ Eye Dominance Testing
  - ➢ Vision Testing
  - ➢ Physical Conditioning
- ❖ Marksmanship Fundamentals
  - ➢ Ballistics
  - ➢ Firing Position Checklist
  - ➢ Dry Fire Exercises and Devices
    - ▪ Dime/Washer Exercise
    - ▪ Target Box Exercise
    - ▪ Laser Marksmanship Training System
    - ▪ EST 2000
- ❖ Grouping and Zeroing
  - ➢ 25-meter Zero
    - ▪ Pre-fire Procedures
    - ▪ Targets
    - ▪ Coaches Checklist
  - ➢ Confirm Zero at Distance
    - ▪ Targets
- ❖ Transitional Firing
- ❖ Rifle Qualification
- ❖ Reflexive Fire Techniques

Recommended Changes

The experience gained through field implementation will be invaluable in making this a better Guide. Users are encouraged to submit recommended changes or comments to improve the publication. Comments should be keyed to the specific page and line in the text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded to:

U.S. Army Research Institute for the
Behavioral and Social Sciences
ARI – Fort Benning Research Unit
PO Box 52086
Fort Benning, GA 31995-2086

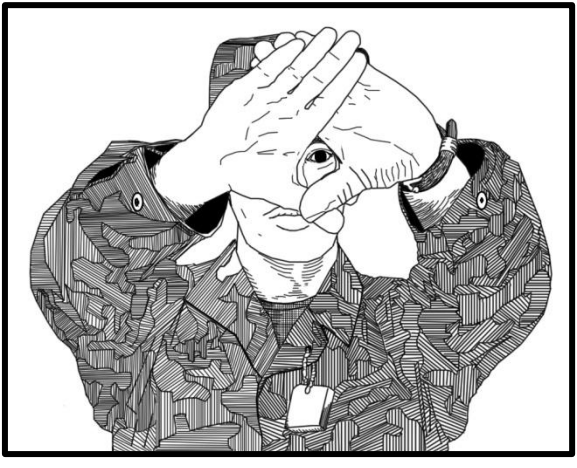
WEAPONS IMMERSION

Army Service Rifle Marksmanship Experience

Soldiers with prior Army service rifle marksmanship experience make good peer coaches who can assist in training their peers. However, training these Soldiers to assist is imperative as they often only have experience as shooters not trainers. Identification and selection of those Soldiers can be made using the listed examples of prior experience.

- ❖ Examples of prior experience.
  - ➢ JROTC.
  - ➢ ROTC.
  - ➢ Shooting club.
  - ➢ Split option trainee.
  - ➢ Reclassification trainee.
- ❖ Conduct Train-the-Trainer with these Soldiers.
  - ➢ Train them how to conduct.
    - ▪ Eye dominance testing.
    - ▪ Vision testing.
    - ▪ How to carry the rifle.
      - ▪ Drill and ceremony with rifle.
      - ▪ Rifle clearing procedures.

Eye Dominance Testing



- Most Soldiers have a dominant eye, one that is stronger than the other. In order to aim precisely, the Soldiers must use their "dominant eye."

- An easy way to teach Soldiers how to determine their "dominant eye" is to have them hold their hands out with the fingers extended and joined, thumbs extended out to the sides. Tell them to overlap their hands at a 90-degree angle until a small window is made with the thumbs. Have them place their hands out at arm's length and look through the opening in their thumbs at an object. Without squinting or closing either eye, tell them to bring both hands to their faces while maintaining visual contact with the

object. The hole will move to their "dominant eye" as their hands reach their faces. If they are still not sure, simply have other Soldiers stand back from them at least 15 feet and look at their faces through the hole in their hands. They will be able to see the "dominant eye" through the hole.

❖ After you have tested for the dominant eye of each Soldier, check for cross-dominant Soldiers – ask who is right eye dominant and left handed or vice versa. Work with all cross dominant Soldiers to determine if they are holding the rifle with the appropriate firing and non-firing hand or need to switch. Remember, those who must switch the eye they use for firing need some time to get used to the new position.

Checking a Soldier's Vision

❖ Verify that all Soldiers have been administered a vision test and that those needing glasses either have them or they have been ordered. Pay special attention to insure they receive their glasses before range procedures and marksmanship fundamentals.

❖ Allow the Soldiers to use their issued prescription glasses if the eye protection inserts are not available.

❖ Test their ability to focus on the front sight post (ask when they are focused).
- ➢ Determine necessary eye relief while using their own rifles (should be within 2 – 6 inches from the rear sight aperture).

- Each Soldier will have a different eye relief based on physical stature and vision.
- Remember one size does not fit all (nose-to-charging handle).
- Teach Soldiers that their eye-relief will change from position to position and with the amount of gear they are wearing.

❖ **Emphasize that they must focus on the front sight when firing.**

Rifle Clearing Techniques

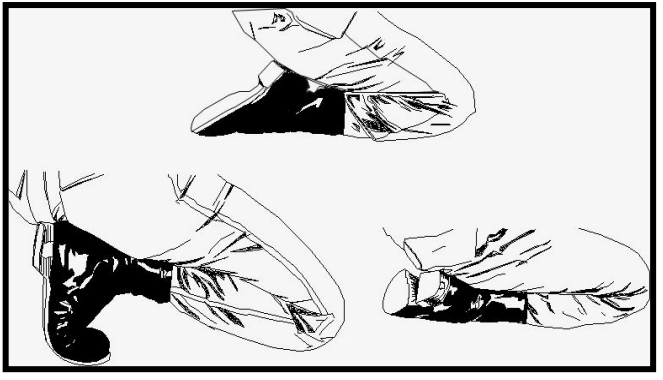
❖ Demonstrate each right-handed (RH) and left-handed (LH) technique.
- ➢ Reinforce that the non-firing hand does everything to clear the weapon (**SP**O**RT**S).
- ➢ Teach the LH firer to use the meaty portion of the index finger (between the knuckle and first joint) to manipulate the selector lever.

Physical Conditioning

❖ Stress the importance of physical conditioning and flexibility in relation to marksmanship.

❖ Demonstrate the firing positions and how conditioning and flexibility are an integral part of each position.
- ➢ Prone Position.
  - Lower back flexibility and strength (unnatural arc).
  - Feet and ankle flexibility (keeping feet flat on the ground).
  - Shoulder strength (help stabilize firing position).
  - Neck strength (help support head [avg. wt. 8 – 12 lbs] with ACH helmet [avg. wt. 2.93 – 3.31 lbs]).

➢ Kneeling Position.



- Foot and ankle flexibility (enhances ability to sit on foot or ankle).
- Core strength (stabilize position and absorb recoil).
- Shoulder strength (ability to hold rifle [7 – 10 lbs] up to head).

❖ Strength, Flexibility, and Stability Techniques.

➢ Teach flexibility and stability from day one using exercise listed in TC 3-22.20 (Army Physical Readiness Training).

- Have Soldiers sit cross legged during bay classes.
- Have the Soldiers lay in a proper prone position during bay classes.

- Conduct stretching exercises each day that focus on each Soldier's ability to get into and maintain steady prone and kneeling positions, e.g.:
  - The bent-leg body twist.
  - Extra stretching during combatives.

➢ Reinforce strength building exercises (SPT and TC 3-22.20), e.g.:
- The Push-up (shoulders and chest).
- 4 for the Core (core).
- The Rower (core).
- Shoulder Stability Drill (shoulders).
- The Prone Row (lower back and shoulders).

❖ Body Mechanics.

➢ Teach and reinforce body mechanics early in the cycle.
- "Elbows -in" and "Side-step."
  - ♦ Teach these techniques to enforce body mechanics for both BRM and reflexive fire.
  - ♦ "Elbows-in" helps create a steady position.
  - ♦ "Elbows-in" is imperative to support the rifle during reflexive fire.
- "Side step" is used to move during reflexive fire.
- Enforce and remind the Soldiers during all events, for example:
  - Dining facility.

- ♦ While Soldiers carry their trays of food – they must keep their elbows in.
- ♦ As they move down the line getting their food they must side step.
- ♦ As they are eating – they must keep their elbows in.

➢ Teach the Soldiers to relax in each position to emphasize the support is from the bone not the muscle.

- Have the Soldiers practice the prone unsupported position constantly.
- At each event, with no chairs present, where the Soldiers are told to "take a knee" or "take seats," have the Soldiers assume a good kneeling firing position without weapon.

MARKSMANSHIP FUNDAMENTALS

Ballistics

- As a trainer, you should understand the fundamentals of ballistics for three reasons:
  - The more you know and understand the more comfortable you will be training Soldiers (being a subject matter expert).
  - To better understand how the rifle and ammunition function together.
  - To teach Soldiers the principles of zeroing and target engagement.

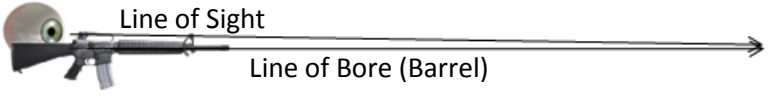
- Soldiers do not necessarily need to know the specifics of ballistics, however, they do need to know how ballistics affect the manipulation of the sights (and vice versa) and how the bullet gets from the rifle to the target (trajectory).

- The first **myth** that must be eliminated is that the bullet has **LIFT** capabilities. Instead, it is the slight cant of the bore (or barrel) that causes the bullet to arc in its trajectory.

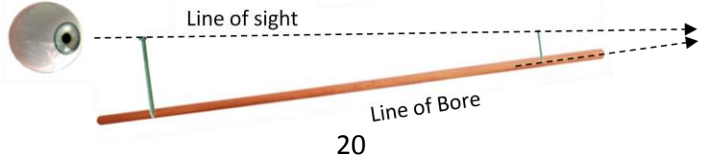
- The next few pages will assist you in your understanding of ballistics.

❖ Line of Sight and Line of Bore.

- Line of sight is accomplished when you align the front sight post in the rear sight aperture, or when you look through the CCO and align the red dot with the target.
- Line of bore (barrel) is a straight line drawn as if looking down the barrel. One way to picture this is to shotgun the rifle, remove the bolt carrier and charging handle and look down the bore from the chamber end; what you see through the barrel is your line of bore.

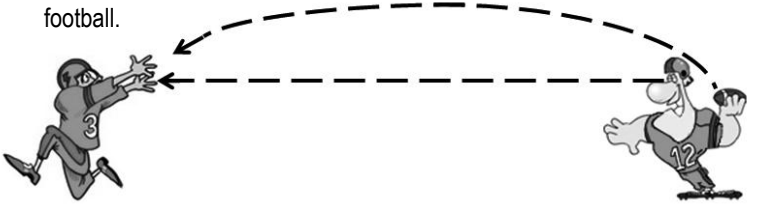


- First, you must understand that the line of sight and the line of bore are not parallel and they will eventually meet. The reason for this is that the rear sight is higher above the bore than the front sight and when you align the two sights with the target it induces a slight upwards cant in the rifle. An exaggerated look can be depicted with a broom handle and two nails.

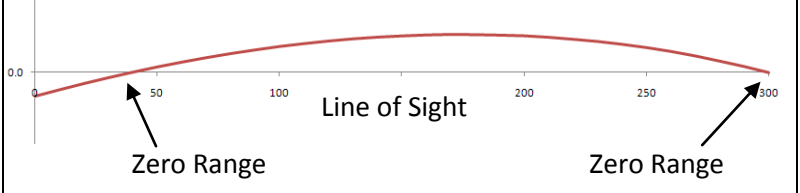


❖Trajectory.

- The bullet, which has no lift capabilities, relies on the cant of the barrel to start it on a flight path (trajectory) that will get it to its target.
- The trajectory of the bullet resembles an arc similar to the flight of a football.

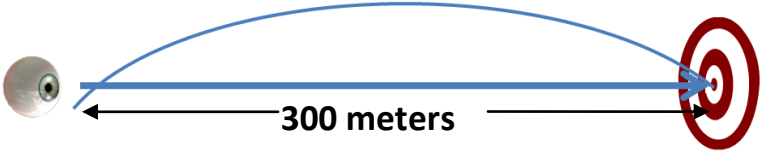


- The bullet leaves the barrel on an upwards trajectory. It crosses the line of sight at 2 places: once on the way up and once on the way down. This is why you can zero the rifle at a short physical distance (e.g. 25-meters) and still be zeroed to hit the target at a far distance (e.g. 300-meters). These points are referred to as the "zero range" in FM 3-22.9.



❖ Point of Aim and Point of Impact.

- When you start incorporating targets into the trajectory picture you now must understand point of aim (POA) and point of impact (POI).
  - POA – is where you align the sights (line of sight) on the target.
  - POI – is where the bullet impacts in relation to your sight alignment.
- A 300-meter zero means that you want the round to impact (POI) the 300-meter target at the same spot that you are aligning the sights (POA).



- In order to get the round to impact where you want it, you must zero the rifle. This is where the closer "zero range" distance comes in. Knowing that the round crosses the line of sight at two locations, a zero target is placed at the closer distance and the impact of the rounds is adjusted so that they will impact the target at distance. To eliminate any inconsistencies in this process, the Army produced the M16/M4-series 25-meter zero target and zeroing procedures.

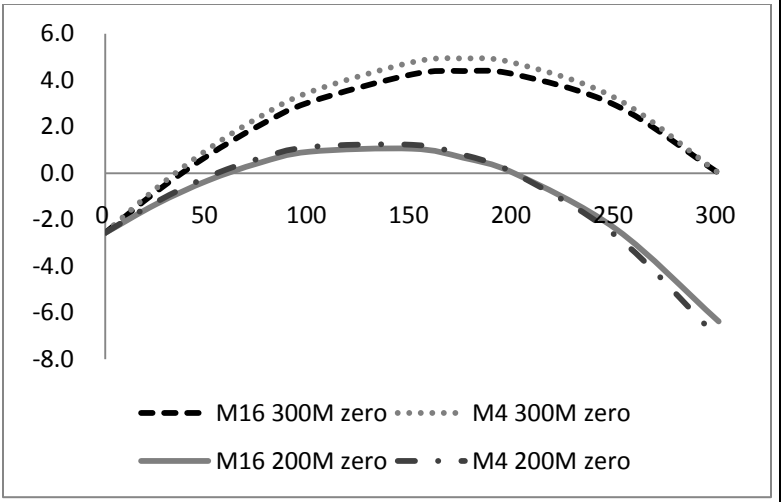
❖Ballistics Tables and Adjusted Zero Ranges.

- Every type of weapon that fires (or throws) a projectile has an associated ballistic table. The velocity (speed) and the weight of the projectile plus the range to the target determine its trajectory. A projectile's trajectory is influenced by external factors such as wind and gravity. When determining the POI for each zero range you must refer to the ballistic tables. The table below shows a comparison between the M16 and M4 rifles and the 200- and 300-meter zero ranges. The numbers represent the location of the bullet in inches below or above the line of sight. The corresponding graph on the next page depicts the trajectory as a curved line.

Range	0	25	50	75	100	150	175	200	250	300
M16 300M zero	-2.6	-0.8	0.7	2.0	3.1	4.2	4.4	4.3	2.9	0.0
M4 300M zero	-2.6	-0.6	1.0	2.4	3.5	4.8	4.9	4.7	3.2	0.0
M16 200M zero	-2.6	-1.3	-0.3	0.4	0.9	1.1	0.7	0.0	-2.4	-6.4
M4 200M zero	-2.6	-1.2	-0.2	0.6	1.1	1.2	0.8	0.0	-2.7	-7.1

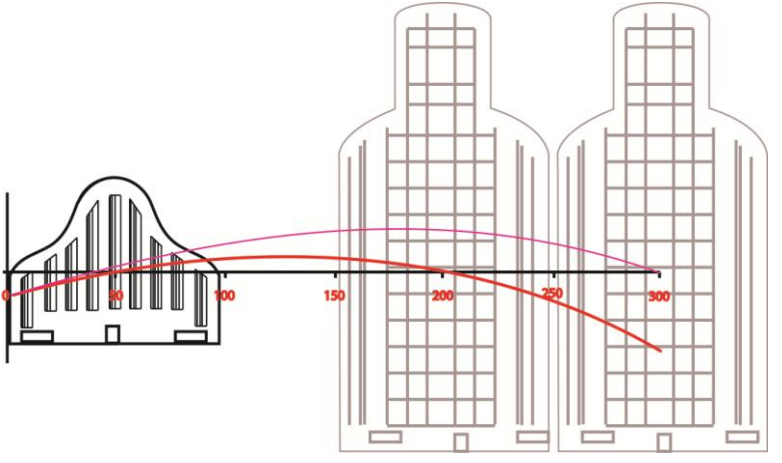
Ballistics Table Data

- Velocity – M16A2-4 = 3100fps and M4 = 2970fps
- Bullet type – M855
- Bullet weight – 62g
- Bullet coefficient (BC) – 0.336



- The difference in the trajectories determines where on the target the bullet will hit (POI). The 0.0 line (X axis) is the line of sight aimed at the center of the target. The 200-meter zero is a flatter trajectory than the 300-meter and will impact lower at closer ranges but will drop off quicker at longer ranges.
- Based on the trajectory of the bullet and the size of the targets, the POA should always be center mass.

- When you superimpose the M16 trajectories (300-meter is upper line and 200-meter is lower line) on targets at distances of 50 – 300-meters you see the approximate impact of the round. **NOTE: THE POA HAS NOT CHANGED, IT REMAINS ON CENTER MASS OF THE TARGET.**



These targets are not exactly to scale.

Natural Point of Aim (NPA)

❖ NPA is the point at which the rifle sights settle when in a firing position.

- When in a firing position with proper sight alignment, the position of the tip of the front sight post will indicate the natural point of aim.
- When completely relaxed, the tip of the front sight post should rest on the desired aiming point (the 300-meter scaled silhouette).
- NPA places the Soldier in a comfortable position.
- NPA reduces muscle tension which reduces the "Wobble Area."
- NPA gives the Soldier a base to reset to after each shot.

❖ To check NPA talk each Soldier through the following steps:

1. Aim on the target
2. Close the eyes
3. Take a couple of breaths and relax as much as possible
4. Open the eyes
5. Position the tip of the front sight post on the desired aiming point while maintaining sight alignment.

❖ For each firing position, specific adjustments will cause the rifle sights to settle center of mass, achieving a natural point of aim.

Adjustment	Result
• Moving the non-firing hand forward on the hand-guards. • Moving the stock higher in the shoulder. • Digging the toes in and pushing the body forward.	• The sights will settle lower on the target.
• Moving the non-firing hand back on the hand-guards. • Moving the stock lower in the shoulder. • Digging the toes in and pulling the body backward.	• The sights will settle higher on the target.
• Pivoting the whole body on non-firing elbow (prone position).	• NPA will be adjusted towards the target.
• Pivoting the whole body on forward foot (kneeling position).	

Firing Position Checklist

Condensed checklists are located at the end of the Guide that can be cutout and laminated for use on the range.

Assist the Soldier in achieving a stable firing position by observing and correcting the following areas:

❖ **Overall comfort level.**

- ➢ Is the Soldier fidgeting?
- ➢ Is the Soldier timid?
  - Remedies
    - Talk the Soldier through each aspect of the position.
    - Relate the process of shooting to Soldier's experience (how to apply the four fundamentals the same way each time).
      - ♦ Example; Basketball analogy
        - ➢ Free-throw pre-shot routine done the same way each time before they shoot.

❖ **Body position in relation to the rifle (Prone).**

- Directly behind rifle.
  - Absorbs recoil and eliminates sideways movement of rifle.

  - Shorter statured Soldiers have a hard time reaching the front hand guards using this method.
    - Identified by cant of body in relation to the rifle (allows sideways movement of rifle during recoil).

- Remedies.
  - Modify hold location for smaller statured Soldiers.
    - Allow them to place their non-firing hands at the juncture of the magazine and slip-ring.

  - Collapse the buttstock until the Soldier becomes comfortable with the rifle.
  - Dry fire when the Soldiers put their gear on and let them adjust the stock to fit.

Characteristics	M4-Series
Length (in)	
Buttstock closed	29.75
Buttstock open	33.00

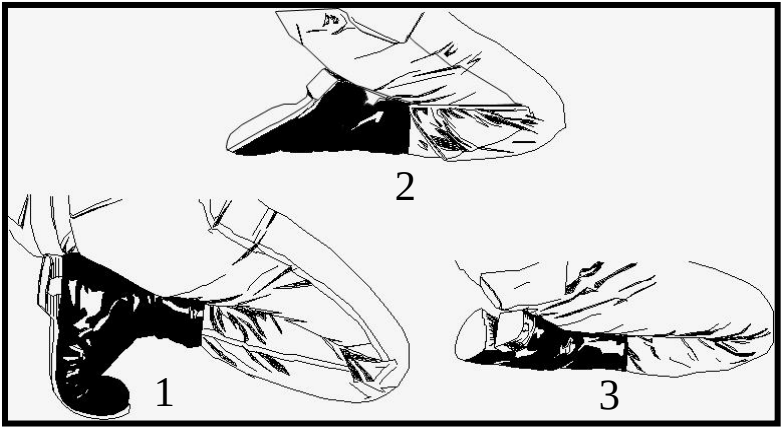
- Overweight Soldiers have a hard time acquiring the targets by not being able to lower themselves far enough to look through the sights.
  - Identified by missed targets and observations as they fire.
    - Remedies.
      - Move them to firing positions that allow them to lay low enough.
      - Allow them to use sandbags to support and raise their rifles.

❖ **Body position in relation to the rifle (Kneeling).**

- Directly behind rifle with a slight lean forward.
  - Absorbs recoil and eliminates sideways movement of rifle.

- Soldiers must compensate for size of IBA.
  - Allow Soldiers to swap IBA in order to shoot with an appropriate size.
- Support the non-firing hand by placing the triceps muscle on the knee or the elbow on the quadriceps muscle.
- The firing elbow should hang loosely at the side, not “chicken winged” into the air.

- Right or left support leg options based on Soldier flexibility and body composition.



1. Keep the right ankle straight, with the toe of the boot in contact with the ground and curled under by the weight of the body.
2. The right ankle is straight and the foot is stretched out with the bootlaces in contact with the ground.
3. Turn the right ankle so the outside of the foot is in contact with the ground and the buttocks are in contact with the inside of the foot.

❖ **Rifle position in relation to the body.**

- Rifle vertical to the Soldier.
  - Canting.
    - Can be determined by standing behind the Soldier and looking at the alignment of the front sight (vertical to the target or canted left or right).
    - Can be determined by shot groups low and left (right handed firer) or low and right (left handed firer).

- Can be caused by too much head pressure.
  - ♦ Lack of neck muscle strength.
    - ➢ This increases as the Soldiers fire continuously.

❖ **Muzzle.**

- ➢ Look at the muzzle of the rifle for the "Wobble Area" – how much the rifle is moving.
- ➢ Directly relates to how comfortable, tense, or fatigued the Soldier is while trying to hold a steady position.
  - Remedies
    - Teach NPA (see previous section).
    - Remove the Soldier from the firing line to recover.

❖ **Hands.**

- Non-firing hand.

- On hand guard, not magazine or slip ring.
- Rifle resting in the "V" of the hand.
- Gripping to control rifle, not just allowing rifle to rest on hand.
- Resting on top of available support (sandbag in prone position).
- As far forward as comfortable.

- Firing Hand.
  - Check the grip to ensure the Soldier has a firm (not death) grip on the rifle.
    - "Shaking hands with the pistol grip" helps the Soldier achieve a "high" grip.
    - The grip tension allows you to maintain this control.
      - "The tension required has been compared to the grip of a father's hand holding his child's hand as they cross a street. You don't want it so tight that it hurts the child, however, you surely don't want to let go!!"
  - Helps hold rifle tight against the shoulder to absorb recoil and maintain control.

➢ Trigger Finger.

- Finger placement allows the trigger to be pulled straight to the rear without disturbing the sight alignment.
- Placement of the trigger finger does not cause the wrist to bend at an unusual angle, but remains in line with the firing arm.
- Trigger finger should be as parallel to the barrel as possible, not canted up or down based on grip.
- Is the finger placed naturally on the trigger?

- Finger tip (unnatural).
- 1st knuckle (natural).
- Wrapped “hooked” (natural).

➢ **Cheek to stock weld/eye relief** - "Resting the full weight of your head on the stock, in a manner that allows the dominant eye to look through the center of the rear sight aperture."

- The Soldiers should position their heads in the same place every time they fire to apply the same sight alignment and obtain the same sight picture. This might not be possible when they put their gear on and adjustments must be made.
- Determine each Soldier's head position on the stock. This is where the head must REST while in position. If the head is not resting on the stock, muscle tension is used to hold it up. When the muscles fatigue, the head will wander behind the rear sight causing errors in sight alignment.
  - Methods (remember that one-size does not fit all and the method will change based on Soldier size and physical stature).
    - Nose to charging handle.
    - Marking the buttstock.
      - Mark the buttstock at the tip of the nose.
        - The peer coach uses a white paint marker.
        - The Soldiers should be able to see the mark each time they place their heads behind the sights.
      - Mark the buttstock where the cheek bone lays.
        - The peer coach lifts the Soldier's head and places moleskin on the buttstock where the cheek bone <u>RESTS.</u>

- ♦ Rotating Head Method.
  - ➢ Rest chin on buttstock at the same point each time.
  - ➢ Rotate head right or left until head starts to slip.
  - ➢ Allow head to slip down buttstock until cheek bone rests on buttstock.
- ♦ Sliding Head Method.
  - ➢ Start with the bottom of the jaw line.
  - ➢ Drag the firing side of the face in a downward movement across the top of the stock until the full weight of the head rests on top of the stock.

- Ensure the Soldiers are looking out of the center of their firing eyes (as straight ahead as possible) in each position. If they aren't looking out of the center of their eyes (periphery or sideways glance), their eyes have to work harder and therefore fatigue more quickly.
  - To reduce eye fatigue:
    - ♦ Elevate the Soldiers' positions by moving their elbows in, causing their heads to be more upright and allowing them to look straight ahead with their firing eyes.

➢ **Elbows.**

- Ensure the non-firing elbow **1** is supporting the weapon when using sandbags.

- Elbow spread must be adjusted to the body size of the Soldier.
  - Too close together or spread far apart decreases the steadiness of the position.
  - Small adjustments will aid the Soldier's ability to aim by raising or lowering the rifle slightly.

- ♦ If the sandbags are too high, the non-firing elbow will not make contact with the ground.

➢ **Buttstock.**

- Buttstock seated in pocket of shoulder not under arm.
- Adjusted based on size of Soldier.
- Firing hand pulling back on rifle to seat buttstock.

➢ **Feet.**

- Soldiers should be taught how to position their feet and legs for both the basic and the alternate prone supported and unsupported firing positions.
- Basic Position.
  - Build flexibility into the Soldiers from the beginning of BCT.
  - Have the Soldiers stretch their legs out behind them.
  - Spread the feet a comfortable distance apart with the toes pointing outboard and the inner portion of the foot in contact with the ground (determined by each Soldier's flexibility).

- Soldiers resting on their toes will have a tendency to rock their feet, increasing instability in the firing position.

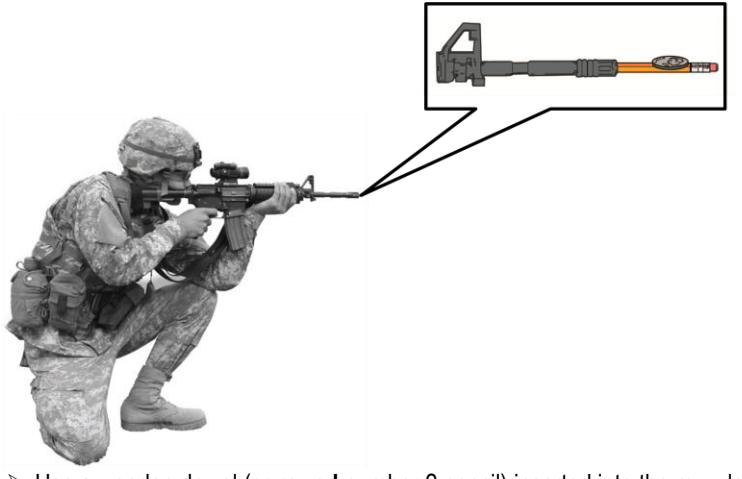
- Alternate position.
  - The alternate firing position can be used when -
  - Short Soldiers have trouble reaching the front handguards.
  - The Soldiers are in full gear.
    - ♦ To relieve pressure on the diaphragm.

Dry Fire Exercises and Devices

This section addresses dry fire exercises and devices that will assist the Soldier in understanding and applying the fundamentals of marksmanship. The exercises and associated devices should be performed early in training and reinforced throughout the preliminary marksmanship instruction (PMI) process.

Dime/Washer Exercise

❖ Exercises used to reinforce fundamentals.



➢ Use a wooden dowel (or **round** number 2 pencil) inserted into the muzzle of the rifle and balance the dime/washer on the dowel to make it more difficult (do not place a metal rod in the muzzle as it may damage the crown of the lands and grooves).

- Loop a full canteen of water over the end of the barrel and snug it up against the front sight post.
  - Helps to develop the strength to hold the rifle on target and reduce "wobble area."

- Conduct the exercises in both **prone and kneeling** firing positions.

Target Box Exercise

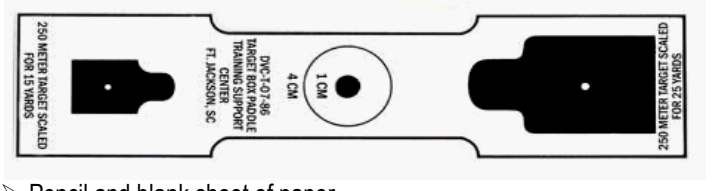
- The exercise is used to teach the Soldiers correct sight alignment and sight picture.
- Soldiers gain proficiency through many repetitions of the exercise.
- This exercise reinforces aiming (sight alignment, focus of the eye, and sight picture) over the other fundamentals.
- This exercise ensures the Soldiers have an understanding of correct sight alignment and picture before moving on to firing live ammunition.
- **Note: The rifle and the target paper must not move in order for this exercise to work as intended. If necessary place a sandbag inside the target box to eliminate movement of the target box, and secure the rifle with Velcro to eliminate movement of the rifle. Place the target paper on an immoveable object, i.e. wall, and secure with tape.**

❖ Before Soldiers begin the exercise, ensure they understand that they must focus on the front sight post **NOT** the target.

❖ The exercise requires the following items:

- Target box.

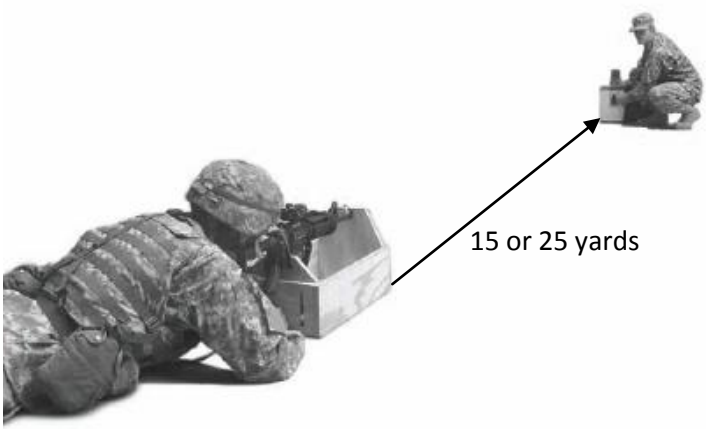
- Target box paddle.



- Pencil and blank sheet of paper.

- 2 Soldiers – firer and target man.

❖ Initial Set-up.
- The exercise can be conducted at either 15 yards or 25 yards depending on space available.
- Secure the target paper to an immoveable object.
- Place the target box 15 or 25 yards away from the target paper.

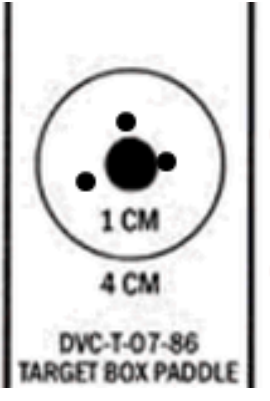


- Have the firer place his rifle securely in the target box.
- Tell the firer to position himself behind the rifle and look through the sights to insure the rifle is aligned with the target paper (the rifle must be stable enough in the target box to allow the firer to rest his head on the buttstock of the rifle).

- When the firer signals he is ready, the target man places the target box paddle on the paper at one of the four corners (use the silhouette that corresponds to the distance from paper to target box).

- The firer signals the target man to move the paddle until the silhouette is aligned in the rifle sights.
- The firer then signals "Mark."
- The target man uses his pencil to mark a spot on the paper using the hole in the center of the silhouette. He then moves the silhouette to another corner of the paper and signals the firer he is ready for the next shot.

The process is repeated until there are 3 or 5 marks on the paper representing the shot group.

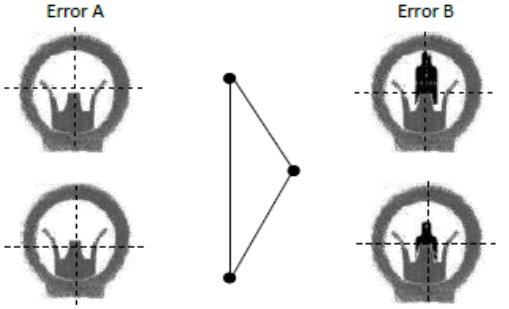


- After each shot group the firer, target man and DS view the shot group.
- The target man uses the 4cm circle to indicate achieving the standard.
- The exercise should be repeated until the Soldier places 2 consecutive shot

groups within the 4cm circle.

- The Soldier fires several shot groups to demonstrate proficiency and understanding of sight alignment and sight picture.
- If the shot group can be covered by the 1cm circle, then the Soldier is demonstrating consistent aiming.
- Assuming the rifle and paper remain stationary and the target man properly marks the three or five shots, the only factor to cause separation of the dots on the paper is error in the Soldier's aiming procedure.
- When the Soldier can consistently direct the target into alignment with the sights on this exercise, he should be able to aim at the same point on the zero range or on targets at actual range.

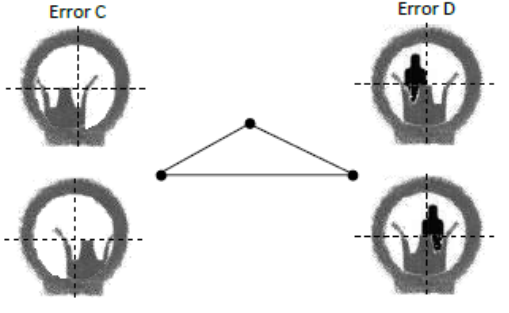
- As a supplement to the instruction in the field manual, use the sight pictures located on the next 3 pages to help train Soldiers on correct sight alignment/picture and how an incorrect sight alignment/picture will impact the shot group.



Top of front sight not exactly on the horizontal diameter of the rear sight

Front sight not aligned with the center of the target

Either kind of error (A or B) will produce a shot group triangle similar to the one above



Front sight not centered from left to right in rear sight

Target aligned vertically but not horizontally

Either kind of error (C or D) will produce a shot group triangle similar to the one above

Sight Alignment

Incorrect
Front sight misaligned to high

Correct

Incorrect
Front sight misaligned to low

Incorrect
Front sight misaligned left

Incorrect
Front sight misaligned right

Ask the Soldier what the sight alignment looked like during the last shot fired. If none of these resembles the sight alignment, have the Soldier draw a picture.

Sight Picture

To High

To Low

Correct

Aiming to far right

Aiming to far left

Ask the Soldier what the sight picture looked like during the last shot fired. If none of these resembles the sight picture, have the Soldier draw a picture.

❖ Additional technique for the target box exercise.

- ➢ Use a 25-meter zero target instead of a target box paddle (punch a hole through the center of the silhouette).

Laser Marksmanship Training System (LMTS)

❖ Information on this training device can be found in FM 3-22.9 (2008).

❖ The key is understanding how to use and apply the system during training.

❖ The system can be used to borelight/zero the Soldiers' rifles prior to firing the first live round.

- Reduces the amount of time and ammunition required to get each Soldier on paper during grouping.
- All LMTS-based zeros must be confirmed by live-fire.

❖ The system reinforces the fundamentals.

❖ Battery operated components are used more frequently when available.

❖ Increase the exercise difficulty by graduating the scale of the targets starting with 100-meter and moving towards 300-meter.

EST 2000 (Grouping)

❖ The EST 2000, and its associated diagnostic software programs, is a very effective training device that can assist you during BRM.

❖ Previously identified problems can be verified using this device.
- ➢ Previously identified cross-dominant Soldiers are given additional exercises to get comfortable firing with the dominant eye.
- ➢ Need for glasses (ability to focus).
- ➢ Understanding correct sight picture (target box exercise).

❖ The diagnostic software available can be used to assist Soldiers who have difficulty grouping.
- ➢ Before-the-shot – wobble area.
- ➢ During-the-shot - trigger squeeze.
- ➢ After-the-shot – follow-through trace.

GROUPING AND ZEROING

25-meter Zero

Pre-fire Procedures

❖ Iron sights and M68 Close Combat Optic (CCO) boresight and alignment.
- ➢ Blacken the front sight post to make it stand out more against the target.

- Use the Francis Barker Small Arms Collimator (SAC) NSN 1240-99-281-3984 to align the sights with the bore.
- Use a chamber borelight to align sights.
- Conduct the 10-meter borelight procedures as outlined in FM 3-22.9 (2008), or in the SAIB, Annex F, pg. 348.
- At a minimum, mechanically zero the iron sights.
- Check CCO mounting bracket to insure optic is mounted square to the weapon. If the CCO is canted in its bracket, adjustment of reticle will be canted.
- If there are no borelight devices available, at a minimum, flush the front sight post and "lollipop" the red dot on the front sight post.

Firing Procedures

❖ Check Soldiers' firing positions using the *Prone and Kneeling Firing Position Checklists* located at the end of the Guide.

❖ Have Soldiers shoot the first 5 or 10 rounds to overcome their fear of the rifle (if available).

❖ Use the peer coach to assist you in identifying firing problems.

Targets

❖ Grouping Targets.

- ➢ The type of target (blank paper, ALT-C, or 25-meter zero) is immaterial if you follow the concept of grouping.
- ➢ Use the following technique to help the Soldier visualize the standard (5/6 or 8/10 rounds in 2 consecutive groups in 4 cm circle).
  - Cut out the 4cm circle from a standard 25-meter zero target.
  - Laminate the target.
  - After the Soldier has fired each group, place the laminated target over each shot group to demonstrate how many rounds would be within the 4cm circle.
    - The laminated target can be overlaid on either a blank sheet of paper or a standard 25-meter target.

❖ Zero Targets.

- ➢ Ensure you are using the correct target for the weapon system (M16 vs. M4), sight system (iron vs. M68 CCO), or zero distance (200-meter vs. 300-meter).
- ➢ See FM 3-22.9 for the appropriate targets and offsets.

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Coaches Checklist

❖ Peer Coaches - Peer coaches, if identified early and properly trained, can assist in BRM training. This checklist will help train the coaches.

Coaches Checklist (front)

(+ = positive technique/action and - = negative technique/action)

Place the coach perpendicular to Firer or canted at a 45 degree angle
Ensure firer is using support (sandbags) properly
Focus on head area of Soldier

- ✓ Watch for head movement
  - – Firer raising head to look at target
  - – Raising head between shots – not comfortable
  - – Not placing head back in same position before each shot
- ✓ Watch for flinching
- ✓ Watch for eyes
  - – Closing while firing
  - • BUIS/Iron sight – trying to shoot with two eyes open
    - + Place a patch over non-firing eye
    - + Coach holding hand over firer's eye
    - – Using non-dominant eye to fire
- ✓ Can firer see target through eye protection
  - + Prescription Lenses
  - – Fogged
  - – Scratched

Coaches Checklist (back)

(+ = positive technique/action and - = negative technique/action)

Focus on rifle

- ✓ Look at how Soldier is grasping the pistol grip
  - \+ High grip
    - o More fingers above pistol grip ridge
- ✓ Look at trigger finger (is finger placed naturally on trigger)
  - \+ Hooked (Natural)
  - – Tip (Unnatural)
  - – Is Soldier slapping trigger and releasing
  - \+ Reinforce steady squeeze, hold, and slowly releasing to reset trigger
    - o Listen for metallic click

Focus on lower back/chest

- ✓ Watch for breathing
  - \+ Steady breathing between each shot
  - – Over breathing (over inflation/exhalation of lungs causing tension/shaking)
  - – Breathing while firing (no natural pause)

Reinforce focusing on the front sight post

Reinforce squeezing trigger without moving the rifle

Shot Groups

Note: Let Soldiers see each shot group. This will enable them to relate results to actions.

❖ Shot group Location.

➢ It is better to have shot group dispersion that is vertical than horizontal.

Vertical Edge

Horizontal Edge

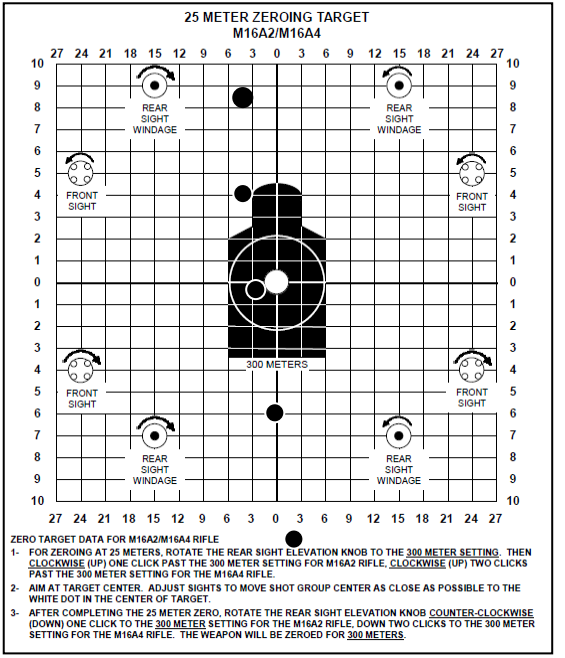
- The E-type silhouette used on most Army ranges is approximately 20 inches wide by 40 inches high. The target is taller than it is wide.
- The dispersion of the M855 round increases from 4cm (1.57in) at 25 meters to 48cm (19in) at 300 meters.
- A two-centimeter (.787in) error at 25-meters equates to a 24cm (9.45in) error at 300 meters.
- If the center of the shot group is on the horizontal edge of the 4cm circle at 25 meters, the natural dispersion of rounds could cause misses at 300 meters.
- If the center of the shot group is on the vertical edge of the 4cm circle at 25-meters, the natural dispersion of the rounds would still impact the target at 300 meters.

❖ Shot Group Analysis.

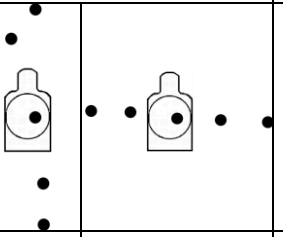
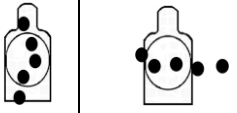
Note: Analyzing only the shot group will not allow you to determine the exact firing problem. Observation of the firer coupled with shot group analysis is the best method for determining the problem.

- The following pages cover some agreed upon shot group examples that will help you narrow your focus when assisting the Soldier

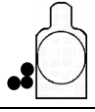
- The silhouette in the following tables represents the silhouette found on the standard 25-meter zero target. In these tables, the rounds around the silhouette are hitting on the paper target, as shown in the example below.



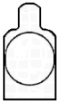
Shot Group Analysis

Shot Group	Target Analysis	Error	Observation and Questioning	Proving or Correcting Error
	Long vertical or long horizontal shot group	Sight alignment 	Use M16 sighting device to observe. Have the firer draw the sight alignment	Target box exercise, LMTS
	Short vertical or short horizontal shot group	Sight picture 	Have the firer draw the sight picture	Use M15A1 aiming card. Target box exercise, LMTS
	Rounds low and right – RH firer Rounds low and left – LH firer	Trigger control	Observe firer	Dry fire, Dime washer exercise, LMTS

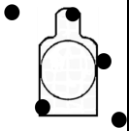
Shot Group Analysis

Shot Group	Target Analysis	Error	Observation and Questioning	Proving or Correcting Error
	Misplaced shot group	Natural point of aim	Excessive muscle tension, muscling weapon towards target	Realign firer by talking through the process of adjustment
	Shot group low and left or low and right	Rifle canted	Stand behind firer and observe rifle orientation	Dry fire

Shot Group Analysis

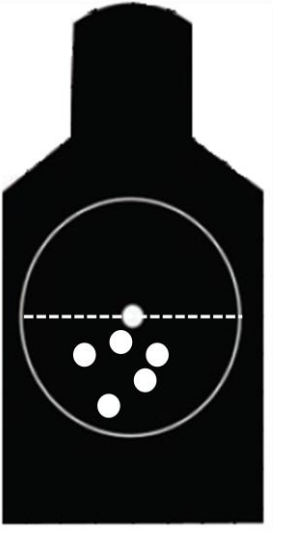
Shot Group	Target Analysis	Error	Observation and Questioning	Proving or Correcting Error
	No rounds on paper or all rounds high above zero target on E-type silhouette	Incorrect setting on rear sight Not looking through the rear sight aperture.	Look at rear sight to insure it is set on 300 meters not 800 meters (there will be a 1/8 to 1/4 –inch gap under rear sight if set at 800).	Rotate elevation knob until the rear sight assembly rests flush with the carrying handle and the 8/3 or 6/3 marking is aligned with the index line, set the rear sight aperture at 8/3 +1, or Z depending on the zeroing method you are using.
	No rounds on E-type silhouette	CCO red dot not aligned with the rifle bore	Check red dot to see if it is on top of front sight post, not ¼ inch high or low	"Lollipop" the red dot by moving the red dot to the top of the front sight post. 

Shot Group Analysis

Shot Group	Target Analysis	Error	Observation and Questioning	Proving or Correcting Error
	Scattered shot group	Anticipating the shot	Observe firer for flinching, closing eyes before firing, tenseness of muscles, death grip on handguard or pistol grip	Ball and dummy exercise. dry fire, dime washer drill
		Eye focused on target not front sight post	Firer explain, firer's ability to focus on front sight post, glasses available, eye relief	Change eye relief and mark buttstock (mole skin under cheek bone), target box exercise
		Changing eye relief/head position between shots	Observe for consistent cheek-to-stock weld	Mark buttstock (paint pen, mole skin), dry fire
		Unstable position	Observe Soldier while firing	Use "Firing Position Checklist" to determine instability

❖ Alternate Method for Zeroing.

- Emphasize zeroing in the lower half of the 4 cm circle.
- This will ensure a higher probability of hits from 150-250 meters.



❖ If a Soldier continues to have difficulty grouping or zeroing:

- Pull the Soldier off the line to decompress.
- Change Drill Sergeants, use a Drill Sergeant who is calmer or more patient.
  - Some Drill Sergeants are known as the **"Private Whisperers,"** They have the:

- Ability to switch from Drill Sergeant to mentor (take hat off).
- Ability to communicate effectively.
- Ability to calm the Soldier down.
- Ability to demonstrate expertise using the Soldier's own rifle.
- Use in one-on-one sessions with "hardcore" firers.

➢ Finally, introduce the Soldier to the concurrent training stations.

Confirm Zero at Distance

Fundamentals

❖ Still focus on the fundamentals.

➢ Sight picture and wobble area become more critical when firing at distance.

Sight Adjustments

❖ You must fully understand how to determine and make sight adjustments using the minute of angle (MOA) if you choose to use this technique (see FM 3-22.9).

❖ To help Soldiers determine and make sight adjustments, provide a memory jogger that lists the increments of measure (MOAs or fractions of an inch) per click of the rifle sights.

Uniform

- ❖ Increase uniform by adding Interceptor Body Armor (IBA) and Modular Lightweight Load-carrying Equipment (MOLLE) harness.
  - ➢ Teach Soldiers how to adjust uniform for comfortable firing positions.
    - Place chest harness high on chest to eliminate pressure on diaphragm.
    - Use the alternate prone position to relieve pressure on the diaphragm.

Targets

- ❖ The primary purpose of confirming zero at distance is to refine the Soldier's zero. The most common error identified is "sight picture." One technique to eliminate this error is to have an easily identifiable point of aim.

- ❖ Paint a white circle on the standard Army E-type or paper 75- and 175-meter targets to define the point of impact.

TRANSITIONAL FIRING

Transitional Firing – teaching the Soldiers how to transition from single targets to single and multiple timed targets.

- ❖ Teach the Soldiers to set-up their initial firing position with their natural point of aim located in the center of the firing lane.
  - For both prone and kneeling.
  - Requires minimal movement to target.
  - Soldier naturally comes back to center after the shot.

- ❖ Teach the Soldier how to shift from one target to another by:
  - Rolling hips and legs.
  - Not resetting whole body.
  - Facilitating a smooth transition and easier re-application of the fundamentals.

- ❖ Reinforce scanning with two eyes open then transitioning to closing non-firing eye (iron sights).

QUALIFICATION

- ❖ Diagnostic techniques used during this phase of training are primarily focused on the Soldiers having the most difficulty qualifying.

❖ Stand back and observe the Soldiers as they fire. Look at the following areas:

- Is their equipment being properly worn and is it properly adjusted?
  - Maladjusted equipment could impede vision or could prevent the Soldier from obtaining a consistent steady position and sight alignment (e.g., straps over the shoulder, helmet not properly seated on head, body armor pressing up from the back).
- Are they in a comfortable position?
  - At times Soldiers feel rushed to get into a firing position and do not take time to get comfortable.
  - They might be lying in a depression or on a slope that hinders getting the body into a comfortable firing position.
- Are they applying the firing fundamentals?
  - See previous section.

❖ Observe the Soldier while shooting to see where the bullet is impacting.

- If the bullets are consistently missing the target in the same direction (e.g., high and to the left), then the Soldier probably needs to re-zero. The sights could have been accidentally moved since zeroing or the Soldiers changed their firing positions in a way that causes them to align the sights differently.
- If the bullets are erratic and missing in different directions, it's possible there is a problem with the weapon.
  - In this case you can have a "good firer" attempt to shoot with this Soldier's weapon or you could shoot with it yourself. If the weapon is

shooting erratic for others, then you probably need to provide the Soldier a different weapon.

- You could also get a weapon from a Soldier who has already shot extremely well, and provide that Soldier's weapon to your Soldier. You know that this weapon must shoot well, so the Soldier's shots should impact in a consistent location, if the Soldier is applying the fundamentals properly.

❖ You can also talk with the Soldier to verify "firing history" to see if you can pinpoint the problem.

- Ask the Soldier if he/she knows what he/she is doing wrong; there might have some underlying issue that you can't detect (e.g., stress, incorrect or scratched glasses).
- Did the Soldier have trouble grouping and / or zeroing?
- Did the Soldier miss any of the BRM periods where practicing transitioning between multiple targets and shifting body position occurred?
- Has the Soldier changed equipment?
- Have there been previous malfunctions with the weapon and were repairs applied?
- Did the Soldier possibly change the sights after zeroing?
- This discussion should be in a relaxed manner; reassure the Soldier, remind him/her of the proper fundamentals, and let him/her know that you are trying to assist, not criticize.

❖ You could also move the Soldier to a different firing lane. Some firing lanes are more challenging than others.

❖ Use the Drill Sergeants known as the “Private Whisperers” to help the Soldier.

REFLEXIVE FIRE TECHNIQUES

❖ Do not teach reflective fire techniques too soon or the Soldier will try to incorporate them into BRM.

❖ The reflexive fire techniques trained from day one, “elbows- in” and “side-step,” are now related to firing actions

- “Elbows-in” relates to the proper method for supporting the weapon during reflexive fire.
- “Side-step” relates to the method of moving while engaging targets.

❖ Correctly getting into the firing stance for reflexive fire is taught using the “take-a-dump” method.

- Mimic the actions of using the commode and stop once you have begun the squat.
- Bring your hands up as if cradling a rifle.
- Move your non-firing foot slightly backwards.

❖ Use “ready-up” drills as often as possible to build shoulder strength, muscle memory, and selector lever manipulation.

❖ Teach rapid magazine changes early in the cycle.

- Parallel.

- L-shaped.

This guide cannot address all the situations you will encounter during IET BRM. However, the application of these training tips and the use of the diagnostic techniques might eliminate the majority of the issues early and allow you to focus on those Soldiers who need more help.

GLOSSARY

SECTION I – ACRONYMS AND ABBREVIATIONS

ACH	Advanced combat helmet
AMU	Army Marksmanship Unit
ARM	advanced rifle marksmanship
BRM	basic rifle marksmanship
BUIS	backup iron sight
CBRN	chemical, biological, radiological, and nuclear
CCO	close combat optic
cm	centimeter or centimeters
EST	Engagement Skills Trainer
FM	field manual
IBA	Interceptor Body Armor
IET	initial entry training
In	inch or inches
JROTC	Junior Reserve Officers Training Corps
KD	known distance
LMTS	Laser Marksmanship Training System
LOMAH	location of misses and hits
M	meter or meters
MOA	minute of angle
MOLLE	Modular, Lightweight, Load carrying, Equipment
POI	program of instruction
SPT	Standardized Physical Training

SECTION II - TERMS

advanced rifle marksmanship (ARM): Normally refers to the formal marksmanship instruction received upon completion of BRM.

aiming: A marksmanship fundamental; refers to the precise alignment of the rifle sights with the target.

aiming card: The M15A1 aiming card is a cardboard sleeve with a moveable insert. The rear sight aperture, front sight post, and target are pictured. This training device is used in conjunction with aiming instructions.

aiming point: A place on a target in which the rifle sights are aligned normally the target center of mass.

aperture: The hole in the rear sight.

ballistics: A science that deals with the motion and flight characteristics of projectiles.

basic marksmanship: Fundamental marksmanship skills taught in BRM during IET and OSUT.

basic rifle marksmanship: The formal course of marksmanship instruction received by all Soldiers.

battlesight zero: A sight setting that Soldiers keep on their weapons. It provides the highest probability of hitting most high-priority combat targets with minimum adjustment to the aiming point, a 250 meter sight setting as on the M16A1 rifle, and a 300 meter sight setting as on the M16A2 rifle.

breath control: The third marksmanship fundamental; refers to the control of breathing to help keep the rifle steady during firing.

center of mass: A point that is horizontally (left and right) and vertically (up and down) at the center of the target.

coach: Any individual who assists firers on the firing line.

coach-and-pupil method: Method of training in which pairs of pupils take turns practicing a procedure explained by the instructor/trainer.

concurrent training: Training that occurs at the same time that other unit members are using the primary training facilities.

cross dominance: A Soldier with a dominant hand and a dominant eye that are not the same; for example, a right-hander firer with a dominant left eye.

dime-washer exercise: A dry-fire exercise used to practice trigger squeeze.

downrange feedback: Used to describe any training technique that provides precise knowledge of bullet strike (whether hit or miss).

dry fire: A technique used to simulate the firing of a live round with an empty weapon. Any application of the fundamentals of marksmanship without live ammunition may be referred to as dry fire.

elevation adjustment: Rotating the front sight post to cause the bullet to strike higher or lower on the target.

eye relief: The distance from the firing eye to the rear sight. Eye relief is a function of stock weld.

firing: The step in the cycle of operation that refers to pulling the trigger, releasing the hammer to strike the firing pin, which strikes the primer. The primer ignites and, in turn, ignites the powder charge within the cartridge case.

firing hand: The right hand of a right-handed firer. The left hand of a left-handed firer.

fundamentals of rifle marksmanship: The four essential elements needed to hit targets: steady position, aiming, breath control, and trigger squeeze.

grouping: A live-fire exercise with the objective of shooting tight shot groups.

gun bore line: A reference line established by the linear extension of the bore axis of a gun.

horizontal dispersion: The left-to-right displacement of bullets on a target.

initial entry training: Indicates the first training received by a new Soldier, includes the MOS-producing portion of his training such as one-station unit training (OSUT).

line of sight: A line between the rifle and the aiming point, extending from the firing eye through the center of the rear aperture, across the tip of the front sight post, and onto the target.

location of misses and hits: A projectile location system that provides immediate and precise information to the firer concerning bullet strike (hit or miss).

minute of angle: An angle that would cover 1 inch at a distance of 100 yards, 2 inches at 200 yards, and so on.

natural point of aim: The direction of the body/rifle combination is oriented while in a stable, relaxed firing position.

natural respiratory pause: The temporary cessation of breathing between an exhale and inhale.

nonfiring hand: The opposite of the firing hand.

peep sight: The rear sight; a sight with a small aperture (hole).

peer coach: A Soldier with shooting experience and knowledge equal to that of the firer he is coaching.

point of aim: The exact spot on a target the rifle sights are aligned with.

point of impact: The point that a bullet strikes; usually considered in relation to point of aim.

qualification firing: Firing on any authorized course that results in meeting qualification requirements; may also be called record fire. (See record fire.)

recoil: The rearward motion or kick of a gun upon firing.

record fire: Any course of fire used to determine if qualification standards are met. The standard record fire course consists of 40 target exposures at ranges between 50 and 300 meters. The standard course requires 23 hits to qualify as marksman, 30 for sharpshooter, and 36 for expert.

regular rear sight: The M16A1 rifle rear sight that is zeroed for 250 meters (the unmarked aperture on rifles with standard sights and the aperture marked L on rifles equipped with LLLSS).

Riddle sighting device: A small magnetic device with a scaled target that attaches to the front sight assembly, allowing the soldier to practice aiming.

rifle cant: Any leaning of the rifle to the left or right from a vertical position during firing.

round: May refer to a complete cartridge or to a bullet.

shot group: A number of shots fired using the same aiming point, which accounts for rifle, ammunition, and firer variability. Three shots are enough, but any number of rounds may be fired in a group.

shot group analysis: A procedure for analyzing the size of shot groups on a target to determine firer error.

sight alignment: Placing the center tip of the front sight post in the exact center of the rear aperture.

sight picture: Placing correct sight alignment on a selected aiming point on a target.

silhouette target: A target that represents the outline of a man.

steady position: The first marksmanship fundamental, which refers to the establishment of a position that allows the weapon to be held still while it is being fired.

stock weld: The contact of the cheek with the stock of the weapon.

supported position: Any position that uses something other than the body to steady the weapon (artificial support).

tight shot group: A shot group with all bullet holes close together.

train the trainer: Describes any training that is designed to train marksmanship instructors or coaches.

trajectory: The flight path the bullet takes from the rifle to the target.

trigger squeeze: The fourth fundamental; squeezing the trigger so that the movement of firing is a surprise, the lay of the weapon is not disturbed, and a target hit can be expected.

unsupported position: Any position that requires the firer to hold the weapon steady using only the body (bone support).

vertical dispersion: The up-and-down displacement of bullets on a target.

windage adjustment: Moving the rear sight aperture to cause the bullet to strike left or right on the target.

wobble area: The natural movement of the weapon/sight on and around an aiming point when the weapon is being held in a steady position.

zeroing: Adjusting rifle sights so bullets hit the aiming point at a given range.

zero target: A scaled-silhouette target with a superimposed grid for use at 25 meters.

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Prone Firing Position Checklist

1. Muzzle – look for excessive movement "wobble area"	2. Non-firing Hand – the hand should be under the handguard gripping the rifle and resting on the sandbag. The barrel must not rest on the sandbag.
3. Non-firing elbow – on the ground supporting the rifle	4. Firing Hand/Trigger Finger – high grip with the finger wrapped around trigger
5. Head Position –resting the full weight of the head on the stock in a manner that allows the dominant eye to look through the center of the rear sight aperture	6. Buttstock – seated in the pocket of the shoulder
7. IBA and ACH – oversized pushing up on the back of the ACH	8. Leg Position – legs straight or non-firing leg cocked
9. Body Alignment – directly behind the rifle	

Kneeling Firing Position Checklist

1. Muzzle – look for excessive movement “wobble area”
2. Non-firing hand – controlling the rifle, not a “death grip”
3. Non-firing Elbow – positioned above or below the knee, no bone-to-bone contact
4. Firing Hand/Finger/Elbow – high grip with the finger wrapped around trigger, elbow tucked in not “chicken winged”
5. Head Position –resting the full weight of the head on the stock in a manner that allows the dominant eye to look through the center of the rear sight aperture
6. Buttstock - seated in the pocket of the shoulder
7. Firing Side Leg – 90 degrees from forward leg for base of support
8. Firing Side Foot – buttocks resting on foot as much as possible
9. Body alignment – NPA aligned with target

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